Trend Study 10R-8-00

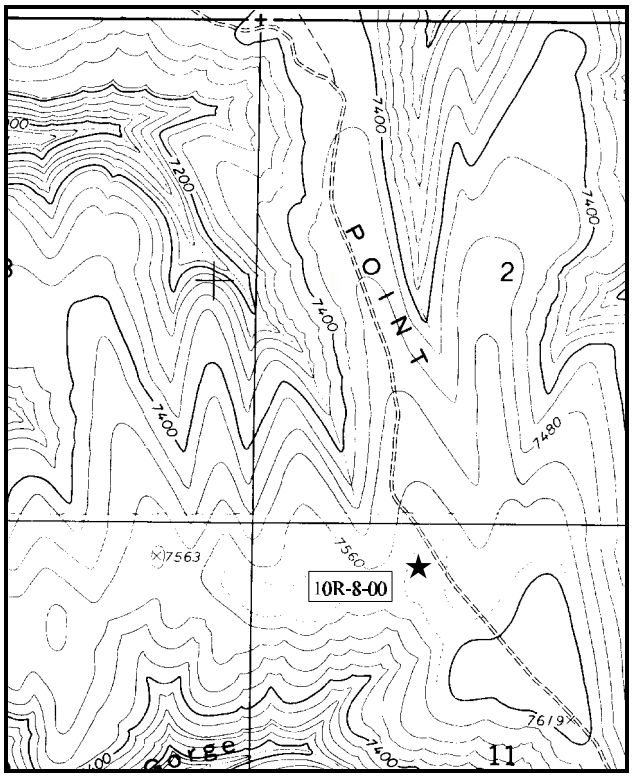
Study site name: Upper Tom Patterson Point . Range type: Mountain Brush-Burn

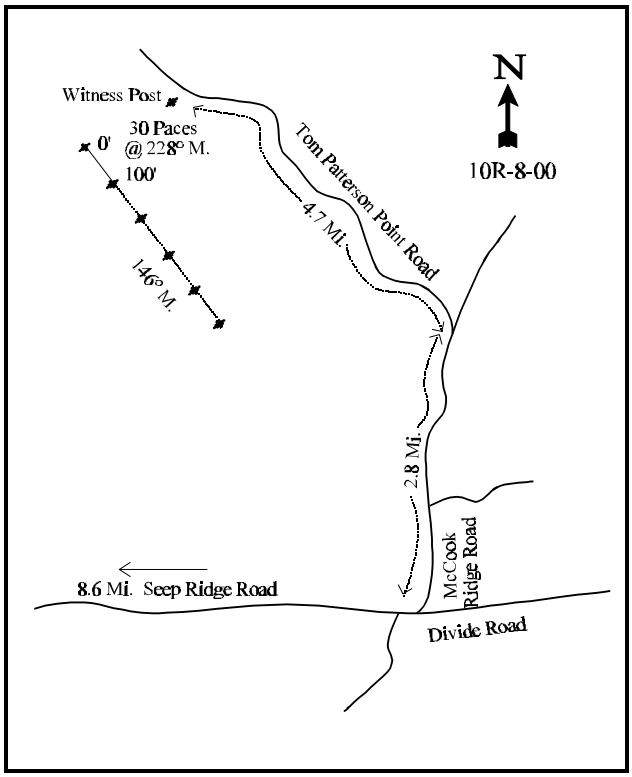
Compass bearing: frequency baseline 146°M.

Footmark (first frame placement) 5 feet. Frequency belt placement; line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From the intersection of Seep Ridge, Divide Road and McCook Ridge Road, take McCook Ridge Road north 2.8 miles. Turn left (west) onto Tom Patterson Point Road. Drive 4.5 miles to a witness post on the left (southwest) side of the road. From the witness post walk 30 paces at 228°M to the 0-foot stake. The study is marked with green steel fenceposts approximately 12-18 inches in height.





Map name: Tom Patterson Canyon

Diagrammatic Sketch

Township 15S, Range 24 E, Section 11

UTM. 4377372.462 N, 654624.283 E

DISCUSSION

Trend Study 10R-8

The Upper Tom Patterson Point study was established in 1997 and is located in a pinyon-juniper woodland that was chained and seeded in the late 1960's. The area now supports a mixed mountain brush community. A prescribed burn was conducted in the area in 1998. The fire was not uniform, leaving patches of unburned browse scattered throughout the study site. Aspect is northerly with a gentle slope of 3-5% and an elevation of 7,340 feet. This area was grazed by cattle before the burn and there is a water tank located about 1/4 mile north of the site, however water must be hauled to it. Pellet group transect data from 1997 estimated 47 elk, 14 cow and 3 deer days use/acre (116 edu/ha, 35 cdu/ha and 8 ddu/ha). This area is within the Sweetwater allotment which permits cattle grazing from June through September on a deferred rest rotation basis. After the burn, the pellet group transect determined use lower at 5 elk and 4 deer days use/acre (12 edu/ha and 10 ddu/ha).

Soil at the site is moderately deep with an effective rooting depth estimated at nearly 15 inches. It has a clay loam texture with a slightly acidic soil reaction (6.3 pH). Phosphorous is low at 3.6 ppm where values less than 10 ppm may limit normal plant growth and development. About 6-8 inches below the soil surface is a layer of shale. In some areas the shale layer was shallow enough to prohibit vegetative growth. The shale layer was discontinuous and varied in depth in some areas. Shale is also found scattered across the soil surface. A layer of organic matter was also noted on the soil surface prior to the burn in 1997. Due to the abundant litter and gentle slope, there was no significant erosion occurring. Some slight pedestaling of plants was apparent, but this appeared to be from past events. After the burn, vegetation and litter cover were significantly reduced and percent bare ground increased from 13% in 1997 to 64% in 2000. Some soil movement in now apparent yet due to the gentle terrain, erosion is not severe.

In 1997 and prior to the prescribed burn, mountain big sagebrush was abundant and provided nearly half of the total browse cover with a population of 4,540 plants/acre. Use was light to moderate, vigor good, and percent decadence low at 7%. Other preferred browse included mountain mahogany, serviceberry, and squaw-apple. Snowberry were also abundant. Pinyon and juniper trees released by the chaining are fairly common. Point-center quarter data from 1997 estimated 87 pinyon and 84 juniper trees/acre.

After the burn, total browse cover declined from 26% to 5%. Mountain big sagebrush still provides nearly half of the shrub cover with a density of 620 plants/acre. Mountain mahogany has a similar density, mostly young resprouting plants. Squaw-apple has declined in density from 600 to 120 plants/acre. The surviving mahogany, squaw-apple, and sagebrush display mostly light use, good vigor and low decadence.

The herbaceous understory is dominated by crested wheatgrass followed by muttongrass, both before and after the burn. Other grasses found in low numbers include: a sedge, prairie junegrass, Kentucky bluegrass, needle-and-thread, and thickspike wheatgrass. Many forbs are scattered throughout the site and offer some forage. The dominate forb, looseflower milkvetch, currently (‘00) provides 70% of the forb cover. All forb cover combined amounted to only 3% cover in 1997 and 2% in 2000. Herbaceous cover is still low but will most likely increase significantly in the future.

1997 APPARENT TREND ASSESSMENT

There is currently no erosion apparent on the site. The gentle slope and abundant vegetation and litter cover should protect the site from both wind and water erosion in the future. Some utilization on the browse species was apparent, but this was only moderate use. The browse species have responded well to the chaining and are suppressing the herbaceous understory. Browse plants are large and spaced close together making it somewhat difficult to walk through the site. The herbaceous understory contains mostly perennial species with crested

wheatgrass the most dominant. A fire might be considered a viable treatment for the site which should greatly increase herbaceous understory production, but sagebrush would most likely be lost from the community for 10-15 years.

2000 TREND ASSESSMENT

A prescribed burn took place in the fall of 1998. It burned in a mosaic fashion leaving scattered unburned patches around the study site. Trend for soil is considered down due to an increase in unprotected bare ground from 13% to 63%. Vegetation and litter cover have both declined due to the burn. Erosion is not a serious problem however, due to the level terrain. Trend for browse is also considered down due to a decline in cover and density of the preferred browse species. This trend will likely reverse itself as the surviving shrubs have time to grow and reproduce. Trend for the herbaceous understory is down due to a decline in the sum of nested frequency of both grasses and forbs.

TREND ASSESSMENT
soil - down (1)
browse - down (1)
herbaceous understory - down (1)

HERBACEOUS TRENDS --
Herd unit 10R, Study no: 8

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'97	'00	'97	'00	'97	'00
G	Agropyron cristatum	266	*175	78	55	4.98	4.67
G	Agropyron dasystachyum	2	-	1	-	.00	-
G	Carex spp.	37	22	14	10	.41	.17
G	Koeleria cristata	6	-	2	-	.01	-
G	Poa fendleriana	145	*42	45	17	1.71	.62
G	Poa pratensis	-	11	-	3	-	.68
G	Stipa comata	-	1	-	1	-	.00
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		456	251	140	86	7.13	6.16
Total for Grasses		456	251	140	86	7.13	6.16
F	Antennaria rosea	8	*-	5	-	.05	-
F	Astragalus tenellus	42	34	18	14	1.08	1.60
F	Aster spp.	1	-	1	-	.00	-
F	Astragalus utahensis	-	1	-	1	-	.00
F	Castilleja flava	38	*14	20	6	.40	.05
F	Calochortus nuttallii	3	-	1	-	.00	-
F	Chaenactis douglasii	1	-	1	-	.00	-
F	Comandra pallida	7	3	4	2	.02	.03

Type	Species	Nested Frequency '97	Nested Frequency '00	Quadrat Frequency '97	Quadrat Frequency '00	Average Cover % '97	Average Cover % '00
F	Crepis acuminata	24	21	12	9	.22	.17
F	Delphinium bicolor	2	-	2	-	.01	-
F	Erigeron spp.	24	*2	14	1	.15	.03
F	Eriogonum racemosum	-	2	-	2	-	.01
F	Eriogonum umbellatum	29	*9	12	3	.31	.21
F	Gayophytum ramosissimum (a)	49	*5	17	2	.08	.01
F	Penstemon watsonii	31	*7	15	5	.60	.10
F	Phlox longifolia	16	14	7	4	.04	.04
F	Polygonum douglasii (a)	50	*-	20	-	.10	-
F	Senecio integerrimus	7	4	5	2	.05	.03
Total for Annual Forbs		99	5	37	2	0.18	0.00
Total for Perennial Forbs		233	111	117	49	2.96	2.29
Total for Forbs		332	116	154	51	3.14	2.30

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 10R, Study no: 8

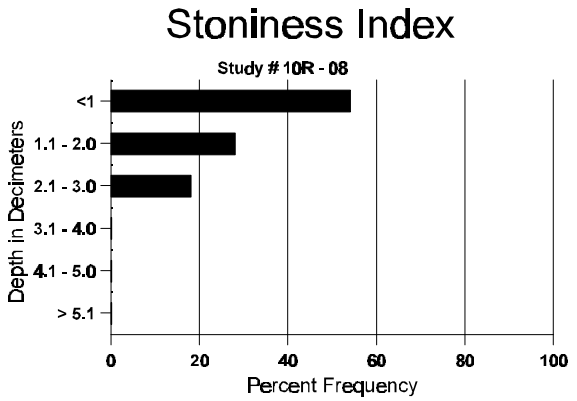
Type	Species	Strip Frequency '97	Strip Frequency '00	Average Cover % '97	Average Cover % '00
B	Amelanchier alnifolia	2	1	.38	.15
B	Artemisia tridentata vaseyana	83	15	12.09	2.41
B	Cercocarpus montanus	24	22	2.25	.65
B	Chrysothamnus depressus	1	0	.03	-
B	Chrysothamnus viscidiflorus viscidiflorus	28	20	.24	.20
B	Juniperus osteosperma	10	0	1.31	-
B	Opuntia spp.	2	1	.00	.03
B	Peraphyllum ramosissimum	23	5	3.37	.53
B	Pinus edulis	6	1	1.50	.03
B	Symphoricarpos oreophilus	45	40	4.61	1.11
Total for Browse		224	105	25.81	5.12

BASIC COVER --
Herd unit 10R, Study no: 8

Cover Type	Nested Frequency		Average Cover %	
	'97	'00	'97	'00
Vegetation	403	235	35.82	13.81
Rock	72	46	1.52	2.25
Pavement	183	297	6.99	3.27
Litter	497	427	57.16	19.05
Cryptogams	114	11	1.90	.21
Bare Ground	179	459	12.67	63.62

SOIL ANALYSIS DATA --
Herd Unit 10R, Study no: 08

Effective rooting depth (inches)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.8	55.8 (16.0)	6.3	37.3	30.2	32.5	2.75	3.57	96.0	0.77



PELLET GROUP FREQUENCY --
Herd unit 10R, Study no: 8

Type	Quadrat Frequency	
	'97	'00
Rabbit	18	8
Elk	17	4
Deer	7	1
Cattle	4	-

Pellet Transect			
Pellet Groups per Acre		Days Use per Acre (ha)	
'97	'00	'97	'00
70	322	N/A	N/A
609	78	47 (116)	6 (14)
35	52	3 (7)	4 (10)
165	13	14 (35)	1 (2)

BROWSE CHARACTERISTICS --
Herd unit 10R, Study no: 8

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
M	97	-	2	-	-	-	-	-	-	-	2	-	-	-	40	35	27	2
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	26	23	1
% Plants Showing			Moderate Use		Heavy Use			Poor Vigor							%Change			
		'97	100%		00%			00%							-50%			
		'00	00%		00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)													'97		40	Dec:		-
													'00		20			-
Artemisia tridentata vaseyana																		
S	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	97	28	13	6	5	-	-	-	-	-	52	-	-	-	1040			52
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	97	72	72	-	16	-	-	-	-	-	160	-	-	-	3200	24	35	160
	00	20	6	-	-	-	-	-	-	-	26	-	-	-	520	22	28	26
D	97	8	4	1	1	-	1	-	-	-	8	-	-	7	300			15
	00	4	-	-	-	-	-	-	-	-	2	-	-	2	80			4
X	97	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
% Plants Showing			Moderate Use		Heavy Use			Poor Vigor							%Change			
		'97	39%		04%			03%							-86%			
		'00	19%		00%			06%										
Total Plants/Acre (excluding Dead & Seedlings)													'97		4540	Dec:		7%
													'00		620			13%
Cercocarpus montanus																		
S	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	97	1	2	-	2	-	-	-	-	-	5	-	-	-	100			5
	00	20	-	-	8	-	-	-	-	-	28	-	-	-	560			28
M	97	6	6	6	3	4	-	-	-	-	25	-	-	-	500	50	38	25
	00	1	1	1	-	-	-	-	-	-	3	-	-	-	60	41	31	3
D	97	-	-	2	-	-	-	-	-	-	1	-	-	1	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing			Moderate Use		Heavy Use			Poor Vigor							%Change			
		'97	38%		25%			03%							- 3%			
		'00	03%		03%			00%										
Total Plants/Acre (excluding Dead & Seedlings)													'97		640	Dec:		6%
													'00		620			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus depressus																		
M	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	6	12	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing			Moderate Use		Heavy Use		Poor Vigor								%Change			
		'97	00%		00%		00%											
		'00	00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'97		20	Dec:		-
													'00		0			-
Chrysothamnus viscidiflorus viscidiflorus																		
S	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	97	3	-	-	1	-	-	-	-	-	4	-	-	-	80			4
	00	29	-	-	-	-	-	-	-	-	29	-	-	-	580			29
M	97	30	-	1	-	1	-	-	-	-	32	-	-	-	640	12	14	32
	00	9	-	-	-	-	-	-	-	-	9	-	-	-	180	7	7	9
% Plants Showing			Moderate Use		Heavy Use		Poor Vigor								%Change			
		'97	03%		03%		00%								+ 5%			
		'00	00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'97		720	Dec:		-
													'00		760			-
Juniperus osteosperma																		
Y	97	6	-	-	1	-	-	-	-	-	7	-	-	-	140			7
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60	-	-	3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
X	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
% Plants Showing			Moderate Use		Heavy Use		Poor Vigor								%Change			
		'97	00%		00%		00%											
		'00	00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'97		200	Dec:		-
													'00		0			-
Opuntia spp.																		
M	97	3	-	-	-	-	-	-	-	-	1	-	-	2	60	3	13	3
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	1	3	1
D	97	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing			Moderate Use		Heavy Use		Poor Vigor								%Change			
		'97	00%		00%		75%								-75%			
		'00	00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'97		80	Dec:		25%
													'00		20			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Peraphyllum ramosissimum																		
S	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	97	10	10	1	3	5	-	-	-	-	29	-	-	-	580	46	55	29
	00	1	1	-	-	-	-	-	-	-	2	-	-	-	40	55	66	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'97	50%	03%	00%	-80%
'00	17%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'97	600	Dec:		-
'00	120			-

Pinus edulis																		
Y	97	3	-	-	1	-	-	-	-	-	4	-	-	-	80			4
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	97	4	-	-	-	-	-	-	-	-	4	-	-	-	80	-	-	4
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
X	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'97	00%	00%	00%	-88%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'97	160	Dec:		-
'00	20			-

Purshia tridentata																		
M	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21	50	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'97	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'97	0	Dec:		-
'00	0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
S	97	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	00	23	-	-	-	-	-	-	-	-	23	-	-	-	460			23
Y	97	22	-	-	4	-	-	-	-	-	26	-	-	-	520			26
	00	88	4	-	-	-	-	-	-	-	92	-	-	-	1840			92
M	97	37	4	3	15	-	-	-	-	-	59	-	-	-	1180	19	33	59
	00	18	-	-	-	-	-	-	-	-	18	-	-	-	360	13	17	18
D	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'97	05%	03%	00%	+20%
'00	04%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'97	1760	Dec:	3%
	'00	2200		0%